

WHAT IS CLAIMED IS:

1. A vehicular control device for a vehicle in which a driving force generated by a power source is transmitted to driving wheels via an automatic transmission
5 whose power transmission efficiency is variable, comprising:
 - an operating-mode control controller that controls an operating mode for the power source;
 - a neutral control performance controller that controls, for the automatic transmission, performance of neutral control for rendering an input frictional
10 engagement element of the transmission in a released or slipping state when the vehicle is stopped while being in a running range in which a driving force delivered from the power source is transmitted to the driving wheels by the automatic transmission; and
 - a neutral control performance prohibition controller that controls
15 prohibition of performance of the neutral control for the automatic transmission on the basis of a predetermined condition regarding operating-mode control performed for the power source.
2. The vehicular control device according to claim 1, wherein:
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 - the automatic transmission is provided with a fluid clutch; and
 - a power transmission efficiency of the automatic transmission can be changed by adjusting an amount of fluid to be contained in the fluid clutch.
3. The vehicular control device according to claim 1, wherein the power
25 source is an internal combustion engine.
4. The vehicular control device according to claim 3, wherein:

cooperative control for adjusting an increase or decrease in output of the engine in accordance with a load required for the driving wheels in the vehicle is performed in the operating-mode control controller; and

the predetermined condition regarding the operating-mode control is
5 determined on the basis of detection of a factor threatening to hinder performance of the cooperative control during performance thereof.

5. The vehicular control device according to claim 4, wherein the factor threatening to hinder performance of the cooperative control is a deterioration in
10 performance of an electronically controlled throttle that adjusts an amount of air sucked into the engine using an electronic element.

6. The vehicular control device according to claim 4, wherein the factor threatening to hinder performance of the cooperative control is a deterioration in
15 performance of an engine valve open-close timing change mechanism that adjusts timings for opening or closing engine valves for actuating the engine.

7. The vehicular control device according to claim 4, wherein the factor threatening to hinder performance of the cooperative control is a deterioration in
20 performance of at least one of an air amount sensor that detects an amount of air introduced into combustion chambers of the engine and a coolant temperature sensor for coolant for cooling the engine.

8. The vehicular control device according to claim 4, wherein the neutral
25 control performance prohibition controller prohibits performance of the neutral control if a factor threatening to hinder performance of the cooperative control is detected during performance thereof.

9. The vehicular control device according to claim 4, wherein the neutral control performance prohibition controller prohibits performance of the neutral control if at least one of a factor threatening to hinder performance of the cooperative control and a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control is detected.

10. The vehicular control device according to claim 4, wherein the neutral control performance prohibition controller prohibits performance of the neutral control if a factor threatening to hinder performance of the cooperative control and a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control are detected.

11. The vehicular control device according to claim 4, wherein the neutral control performance prohibition controller abstains from prohibiting performance of the neutral control if a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control has not been detected even in the case where a factor threatening to hinder performance of the cooperative control has been detected.

12. A vehicular control device for a vehicle in which a driving force generated by a power source is transmitted to driving wheels via an automatic transmission whose power transmission efficiency is variable, comprising:

an operating-mode control controller that controls an operating mode for the power source;

a neutral control performance controller that controls, for the automatic transmission, performance of neutral control for rendering an input frictional engagement element of the transmission in a released or slipping state when the vehicle is stopped while being in a running range in which a driving force delivered

from the power source is transmitted to the driving wheels by the automatic transmission; and

5 a neutral control performance prohibition controller that prohibits performance of the neutral control for the automatic transmission on the condition that a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control be detected.

13. The vehicular control device according to claim 12, wherein:
the automatic transmission is provided with a fluid clutch; and
10 a power transmission efficiency of the automatic transmission can be changed by adjusting an amount of fluid to be contained in the fluid clutch.

14. The vehicular control device according to claim 12, wherein the power source is an internal combustion engine.
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15. The vehicular control device according to claim 14, wherein the factor threatening to cause a deterioration in vehicular performance is determined on the basis of at least one of a bed temperature of a catalyst disposed in an exhaust passage of the internal combustion engine so as to purify exhaust gas flowing through the exhaust passage and a temperature of coolant for cooling the engine.
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16. A vehicular control method for a vehicle in which a driving force generated by a power source is transmitted to driving wheels via an automatic transmission whose power transmission efficiency is variable, comprising the steps of:
25 controlling an operating mode for the power source;
controlling a performance of a neutral control, for the automatic transmission, the neutral control for rendering an input frictional engagement element of the transmission in a released or slipping state when the vehicle is stopped while

being in a running range in which a driving force delivered from the power source is transmitted to the driving wheels by the automatic transmission; and

controlling a prohibition of performance of the neutral control for the automatic transmission on the basis of a predetermined condition regarding operating-
5 mode control performed for the power source.

17. The vehicular control method according to claim 16, wherein:
the automatic transmission is provided with a fluid clutch; and
a power transmission efficiency of the automatic transmission can be
10 changed by adjusting an amount of fluid to be contained in the fluid clutch.

18. The vehicular control method according to claim 16, wherein the power source is an internal combustion engine.

15 19. The vehicular control method according to claim 18, wherein:
cooperative control for adjusting an increase or decrease in output of the internal combustion engine in accordance with a load required for the driving wheels in the vehicle is performed in the step of controlling an operating mode; and
the predetermined condition regarding the operating-mode control is
20 determined on the basis of detection of a factor threatening to hinder performance of the cooperative control during performance thereof.

20. The vehicular control method according to claim 19, wherein the factor threatening to hinder performance of the cooperative control is a deterioration in
25 performance of an electronically controlled throttle that adjusts an amount of air sucked into the engine using an electronic element.

21. The vehicular control method according to claim 19, wherein the factor threatening to hinder performance of the cooperative control is a deterioration in

performance of an engine valve open-close timing change mechanism that adjusts timings for opening or closing engine valves for actuating the engine.

22. The vehicular control method according to claim 19, wherein the factor
5 threatening to hinder performance of the cooperative control is a deterioration in performance of at least one of an air amount sensor that detects an amount of air introduced into combustion chambers of the engine and a coolant temperature sensor for coolant for cooling the engine.

10 23. The vehicular control method according to claim 19, wherein performance of the neutral control is prohibited in the step of controlling prohibition of performance of the neutral control, if a factor threatening to hinder performance of the cooperative control is detected during performance thereof.

15 24. The vehicular control method according to claim 19, wherein performance of the neutral control is prohibited in the step of controlling prohibition of performance of the neutral control, if at least one of a factor threatening to hinder performance of the cooperative control and a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control is
20 detected.

25 25. The vehicular control method according to claim 19, wherein performance of the neutral control is prohibited in the step of controlling prohibition of performance of the neutral control, if a factor threatening to hinder performance of the cooperative control and a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control are detected.

26. The vehicular control method according to claim 19, wherein prohibition of performance of the neutral control is abstained from in the step of controlling

prohibition of performance of the neutral control, if a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control has not been detected even in the case where a factor threatening to hinder performance of the cooperative control has been detected.

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27. A vehicular control method for a vehicle in which a driving force generated by a power source is transmitted to driving wheels via an automatic transmission whose power transmission efficiency is variable, comprising the steps of:

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controlling an operating mode for the power source;

controlling a performance of a neutral control, for the automatic transmission, neutral control for rendering an input frictional engagement element of the transmission in a released or slipping state when the vehicle is stopped while being in a running range in which a driving force delivered from the power source is transmitted to the driving wheels by the automatic transmission; and

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controlling a prohibition of performance of the neutral control for the automatic transmission on the condition that a factor threatening to cause a deterioration in vehicular performance through performance of the neutral control be detected.

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28. The vehicular control method according to claim 27, wherein:

the automatic transmission is provided with a fluid clutch; and

a power transmission efficiency of the automatic transmission can be changed by adjusting an amount of fluid to be contained in the fluid clutch.

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29. The vehicular control method according to claim 27, wherein the power source is an internal combustion engine.

30. The vehicular control method according to claim 29, wherein the factor threatening to cause a deterioration in vehicular performance is determined on the basis of at least one of a bed temperature of a catalyst disposed in an exhaust passage of the internal combustion engine so as to purify exhaust gas flowing through the exhaust passage and a temperature of coolant for cooling the engine.

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